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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,155	11/04/2005	Yasuhiro Chouno	033082M237	9205
441	7590	11/27/2006	EXAMINER CHANDRA, SATISH	
SMITH, GAMBRELL & RUSSELL 1850 M STREET, N.W., SUITE 800 WASHINGTON, DC 20036			ART UNIT 1763	PAPER NUMBER

DATE MAILED: 11/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/522,155

Applicant(s)

CHOUNO ET AL.

Examiner

Satish Chandra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 January 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 1/05, 7/05, 8/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because some of the parts are labeled in Japanese language. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 – 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al (US 2002/0148566) in view of Anderson et al (US 2003/0178145).**

**Kitano et al discloses:**

Regarding claim 1, A processing vessel 33 (Fig 7) comprising

A vessel body 61,

A vessel cover 60 adapted to be separably and hermetically joined to the vessel body 61 defining a processing space 'S' together with the vessel body.

A plurality of substrate support rods (pins) 78 incorporated in the vessel body.

A driver 81 (Para 0054) for raising and lowering the pins.

A plurality of vertical bores (holes) 80 wherein the rods are vertically movable inserted in the bores between a first vertical position (lower, rested) and a second vertical position (raised).

A plurality of vertical bores each having an open upper end, opening into the processing space and the shanks of the substrate rods (pins) are vertically movably inserted in the bores.

Regarding claim 5, proximity pins 77 (Fig 6) are provided at positions above the mounting table 61 wherein the wafer W is mounted on these proximity pins 77. Fig 17 shows the substrate is supported by substrate support rods (proximity pins) wherein these proximity pins are at a height higher than that of substrate support surfaces of the upper ends of the pins at the first vertical position.

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Regarding claims 6 and 7, a raising and lowering driver 81 (Fig 7) connected to a flange 79 for vertically moving (raising and lowering) the pins 78 through holes 80 wherein the expandable and contractible bellows 82 surround the lower ends of the pins to prevent gases from flowing into the processing chamber S through the through-holes 80 (Para 0054 and 0055).

Regarding claim 14, a raising and lowering driver 81 (Fig 4) which includes a cylinder surrounding the piston and a working fluid supply system to supply hydraulic (working) fluid to the cylinder.

**Kitano does not disclose:**

Regarding claim 1, support rods' (pins) heads unable to pass through the bore of the vessel body wherein the heads are configured to close the open upper ends of the bores at the first vertical position.

Regarding claim 2, support rods' (pins) heads are provided with an elastic sealing member to prevent the processing fluid from flowing into the bore at the first vertical position.

Regarding claim 3, upper surface of the vessel body is provided with recesses to receive the pins' head.

Regarding claim 4, heads of the pins are tapered.

**Anderson discloses:**

Regarding claim 2, Anderson teaches a conical head made out of elastic material that fits in the recess to seal the gap.

Regarding claim 3, Anderson discloses in Fig 2B a recess to receive the head of

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the substrate pin held at the first vertical position wherein the bores of the vessel body extend downward from the bottom surfaces of the recesses.

Regarding claim 4, Anderson discloses in Fig 2B, a tapered pin head and the inner circumference (of each of the bores) adjacent to the upper end of each bore has a shape complementary to the tapered outer circumference of the tapered head. Each of the outer circumferences and each of the inner circumferences are in close contact with each other to form a seal to restrict the flow of purge gas.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide heads on the pins in the apparatus of Kitano et al as taught by Anderson.

The motivation for providing pins heads is to seal the bores of Kitano et al as taught by Anderson et al.

**Claims 8, 9,16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al (US 2002/0148566) and Anderson et al (US 2003/0178145) as applied to claims 1-7 and 14 above and further in view of Shindo et al (US 2002/0132480)**

**Kitano et al and Anderson et al do not disclose:**

a locking mechanism having a stopper adapted to separatably engage with the cover or an arm locking mechanism.

**Shindo et al discloses:**

A locking mechanism 200 on an open and close mechanism (Para 0108) for fastening the container body to the container cover in a sealed state. The purpose of providing a

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locking mechanism to a driving means (i.e. an opening/closing means or arm moving mechanism) is to increase operational safety and prevent the inadvertent activation or movement of the drive.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a cover locking mechanism and an arms locking mechanism to lock the cover and arm in fixed position in the apparatus of Kitano et al and Anderson et al as taught by Shindo et al.

The motivation to provide a cover locking mechanism to lock the cover is to lock the cover on to the process chamber to make it seal tight and increase operational safety as taught by Shindo et al.

The motivation to provide an arms locking mechanism is to secure the pins and prevent their movement.

**Claims 10 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al (US 2002/0148566), Anderson et al (US 2003/0178145) as applied to claims 1- 7 and 14 above and further in view of Hawk et al (US 6,330,822) and Chan et al (US 6,460,404).**

**Kitano et al and Anderson et al teaches:**

Providing two o-rings 70 (first sealing member and the second sealing member disposed on an outer side of the first sealing member) by which the vessel body and the cover is sealed forming a sealed process space S (Fig 7).

**Kitano et al and Anderson do not teach** providing a suction line and a pressure gauge (sensor) connected to the sealed space.

**Hawk et al teaches** a vacuum line between two o-rings 87, 88 to remove gas between them (Fig 14, Column 4, lines 46-48).

**Chan et al teaches** a pressure sensor to detect leaks in a sealed space (Fig 1, Column 3, lines 26-29).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a suction line and a pressure sensor connected to the sealed space in the apparatus of Kitano et al and Anderson et al as taught by Hawk et al and Chan et al.

The motivation for adding the suction line of Hawk et al to the sealed space of Kitano et al and Anderson et al is to remove air between the o-rings (sealed space) and improve the seal.

The motivation for adding pressure sensor in the apparatus of Kitano et al, Anderson et al is to detect leaks in the sealed space as taught by Chan et al.

**Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al (US 2002/0148566), Anderson et al (US 2003/0178145), Hawk et al (US 6,330,822) and Chan et al (US 6,460,404) as applied to claims 1 -7, 10-12 and 14 above and further in view of Toshima et al (US 2002/0045008).**

**Kitano et al, Anderson et al, Hawk et al and Chan et al do not disclose:**

Providing an ozone killer connected to the process.

**Toshima et al discloses:**

Providing an ozone killer 80 (Fig 2, Para 0039) connected to a processing vessel 10 to deplete ozone concentration in the vessel.



Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide an ozone killer for removing ozone from the process chamber in the apparatus of Kitano et al, Anderson et al, Hawk et al and Chan et al as taught by Toshima et al.

The motivation to provide an ozone killer connected to a processing vessel is to remove ozone from the interior atmosphere of the processing vessel as taught by Toshima et al.

**Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kitano et al (US 2002/0148566), Anderson et al (US 2003/0178145) as applied to claims 1-7, and 14 above and further in view of Ferreira et al (US 5,804,042).**

**Kitano et al teaches** an actuator to move the cover vertically.

**Kitano et al and Anderson do not teach** an actuator that includes springs pushing the substrate support rods (pins) upward, a pressing member attached to the cover and adapted to depress the substrate support rods (lift pins) against the resilience of the springs when the cover is lowered.

**Ferreira et al teaches** an actuator that includes springs 78 pushing the substrate support rods (pins) 74 upward, a pressing member 46 attached to the cover 47 and adapted to depress the substrate support rods (lift pins) against the resilience of the springs when the cover is lowered.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the actuator of Kitano et al and Anderson et al with the actuator of Ferreira et al.

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The motivation for replacing the actuator of Kitano et al and Anderson et al with the actuator of Ferreira et al is to provide an alternate and equivalent actuator.

Substitution of equivalents requires no express motivation. *In re Fount*, 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152, USPQ (CCPA 1967).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Satish Chandra whose telephone number is 571-272-3769. The examiner can normally be reached on 8 a.m. - 4:30 p.m..

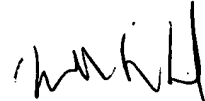
If attempts to reach the examiner by telephone are unsuccessful, Primary Examiner, Lund R. Jeffrie can be reached on 571-272-1437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Satish Chandra



Jeffrie R. Lund  
Primary Examiner

SC

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